

Practical constraints limit the alternative courses of action to a very few and the target sectors to a small but reasonable number. This is in accordance with the intent of the Congress, as expressed in the legislative history of the Metric Study Act.

## THE ALTERNATIVES

*Alternative One* is for the government to do nothing, which means in this case, to allow events to develop with no overt formal action to alter the pattern of voluntary adjustments now emerging. As we have seen, this pattern is leading to limited metrication and must be considered as a course of action, certainly feasible, leading to metrication.

Another possibility, but not to be entertained, is to arrange for some mandated action to *reverse the trend* toward metrication, in favor of a return to more complete use of "customary" hardware and software. Since this would be impractical, to say the least, and would further isolate the United States from the rest of the world, it is believed neither desirable nor worthy of serious attention. In fact, brief preliminary examination of this possibility brought forth no discerning body of opinion in support of such action. At the conclusion of the preliminary phase, therefore, it was dropped from further consideration.

In writing the Metric Bill, the Congress was careful to avoid giving the impression that instantaneous mandatory conversion was contemplated. No nation that has undergone a metric transition has ever accomplished it in that manner. We do not believe that instantaneous mandatory conversion is a policy alternative that requires serious study and therefore have not included this possibility as an alternative to be studied.

Another possibility is for the government to lead in the adoption of a national plan. *Two conversion periods merit attention: 10 years and "optimum," and these lead to alternatives two and three.*

*Alternative Two:* Consider a coordinated national program of metrication, designed to be completed over a 10-year period. Ten years has been selected arbitrarily, but is the period adopted by the British and Australians as the appropriate timetable for this process. New Zealand has opted for 7 years.

*Alternative Three:* Consider a coordinated national program scheduled at the "optimum" rate. Since many sectors of the economy are deeply interlocked with respect to materials, components, and software, and each may find a different time scale to be a suboptimization of the total economy, the determination of an "optimum" conversion period is a difficult problem to solve. Accordingly, the study plan requires each affected sector of the economy to try to estimate what would be the optimum time scale for it to convert, on the assumption that other sectors of the economy have made the necessary changes to permit orderly conversion by the sector in question.

The Study seeks quantitative cost information from selected manufac-

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turers with respect to metrication in the two time frames indicated, with an expectation that the data will allow some qualitative judgment about the relative merits and costs of different rates of metrication.

These three alternatives comprise the set to be used in the Study. They all involve metrication in some degree and are thus subject to the criticism of being focused too much on metrication. The fact is, however, that this nation has been part metric for more than 100 years and is steadily increasing its metric usage. In the absence of contrary overt action, indications are that it will continue to do so, although sporadically and hesitantly, in the absence of a commitment by the rest of the society to join in the change.

The sectors of our society in which the benefits and costs of these three alternatives are to be assessed include, but are not limited to:

- (1) Manufacturing Industry
- (2) Nonmanufacturing firms
- (3) Department of Defense
- (4) Federal Agencies other than military
- (5) International Trade
- (6) Commercial Weighing and Measuring activities
- (7) State and Local Governments
- (8) Educational System
- (9) Citizens in general and as consumers
- (10) Labor
- (11) Engineering Standards

Should significant facts or opinions emerge to indicate the need to incorporate other cross sections of our society, these will be incorporated if time and other circumstances permit.

As a practical matter, the Study has been structured into fourteen major activities, essentially related to the sectors of the society listed above, and whose description follows, with an indication of their present status (October 1, 1970).

**SURVEYS AND INVESTIGATIONS**

1. A general survey of the manufacturing industry through a sample of almost 4,000 firms. The questionnaire used in this general survey asks questions with respect to the current and anticipated use of metric units and metric based standards, advantages and disadvantages to the firm of an assumed program of national metrication, and the firm's positions on possible international and domestic competition and other views regarding metrication.

2. Special cost analyses by over 150 manufacturing firms that have volunteered to estimate, under specified assumptions in a hypothetical program of metrication, the net costs of metrication to them. Each of these cost analyses will try to estimate the net costs with respect to such factors as personnel education; engineering, research, and associated documentation; manufacturing and quality control; records and accounting; standards activities; warehousing; and sales and services.

3. A random-sample survey by telephone interview of some 3,000 non-

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manufacturing firms, ranging from agricultural establishments to financial institutions. The questions in this survey differ from those in the survey of manufacturing firms because of the obvious differences in the activities of such firms, but are nevertheless designed to elicit information with respect to the key issues of the U.S. Metric Study.

4. An intensive study by the Department of Defense of the metric study issues in terms of defense readiness and other national security considerations. In brief, the Department of Defense is attempting to estimate the cost of maintaining constant mission capability during an assumed 10-year metrication period and to identify the advantages and disadvantages that may be experienced during and after that period.

5. A survey of some 35 Federal agencies, other than the Department of Defense, to determine the effects of alternative courses of action on the operations of these agencies, as well as on their areas of national responsibility. This survey will try to assemble data as to which Federal agencies use the metric system and to what extent, which of them plan to increase metric usage voluntarily irrespective of any national decision regarding metrication, what the effects would be on agency missions should such a decision be made and put into effect, and what the probable effects would be on the area of national activity (e.g., transportation) for which the agency is responsible.

6. A special study of international trade, which is being conducted by the Bureau of Domestic Commerce of the Department of Commerce. This inquiry will be addressed to over 750 firms that are engaged in the international trade of manufactured products that are "measurement sensitive"—i.e., are more likely to be affected by differences in measurement practices and engineering standards than are, for example, shipments of bulk goods such as grain. Three broad classes of data will be sought. First, questions will be asked as to the foreign operations of the firm. Next, firms will be asked to try to rank the factors that influence international trade, such as superior quality of product, more advanced technology, better financing, better servicing, and to compare these factors with whatever influence a different measurement system may have on exports and imports. Finally, the respondents in this survey will be asked to predict the magnitude of their international trade activities in 1975 under two different assumptions for comparison: the United States as still "customary" (inch-pound) versus the United States as a "metric" (meter-kilogram) country.

7. An analysis of the history of metric debate in this country, which is expected to provide valuable insights. This analysis will provide a historical review (1866-1968) of the legislative activities pertaining to proposals to introduce the metric system into the United States, highlight the campaigns waged by pro- and anti-metric factions during the period, and examine the consequences of these campaigns.

8. A study of commercial weighing and measuring activities at the State and local level and of the problems of converting devices in this field. The purpose of this study will be to estimate the cost of adapting or replacing commercial weighing and measuring devices to record in metric units, determine the practical difficulties that would be experienced in such a changeover, and identify ways and means by which these difficulties could be minimized or at least substantially reduced.